Math 241: HW 6

Due on Wednesday, September 18

Fall '13

John "*Curlee*" **Robertson**

Problem 1

For the given function, find it's derivative by using the POWER RULE (application of other rules is NOT permitted).

$$b(x) = \frac{10}{x^5} \quad \text{hint: } \frac{10}{x^5} = 10x^{-5}$$

$$f(x) = 2x^{10} + \pi x^{\sqrt{5}} + \frac{10}{x^5} + 3x + 7$$

$$g(x) = \frac{x^5 + x^{\sqrt{2}}}{x} \quad \text{Hint: simplify first}$$

$$h(x) = \frac{x^m x^n + 100x^{k+1}}{x^k} \quad \text{for constants m,n,k}$$

Problem 2

Removable Discontinuity: Sometimes we can force a discontinuous function to be continuous by adding a single point. When we can do this, we call the discontinuity a **removable discontinuity**. A great example of this is the function $f(x) = \frac{\sin(x)}{x}$, who is perfectly continuous on his domain (which is all the reals except 0). From $f(x)$ we can construct a new function, $F(x)$, by defining a value for $F(x)$ at $x = 0$ and then making $F(x) = f(x)$ for all $x \neq 0$. What value should $F(0)$ be if we desire $F(x)$ to be continuous at $x = 0$?